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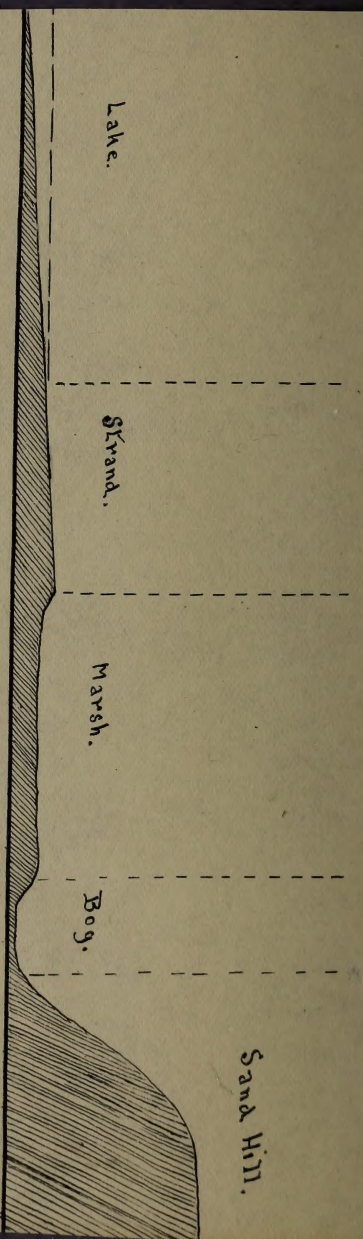
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Guelph, Ontario.

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Cross-section of Lake Sturgeon River
 near Oshkosh, Ont.
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THE ONTARIO NATURAL SCIENCE BULLETIN

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THE ONTARIO NATURAL SCIENCE BULLETIN

JOURNAL OF THE
WELLINGTON FIELD NATURALISTS' CLUB,
GUELPH, ONT.

NO. 2 1906

Use and Abuse of the Subspecies.

—:O:—

JONATHAN DWIGHT, JR., M.D.

The growth of the subspecies or geographical race has been so rapid during the last quarter of a century that much confusion of opinion as to its nature and its utility has been the consequence. Names, like flakes of a snowstorm, have accumulated since trinomials have found favor in scientific circles, and some branches of natural history are already nearly buried in the drifts. Many people are asking "What is a subspecies?" and "What is the use of naming it?" Chiefly for the benefit of such inquirers, it is my present purpose to briefly sketch the current opinion of the day regarding the subspecies, and the trinomial by which it is designated.

SPECIES AND SUBSPECIES.—From earliest times the species has been the unit in the animal kingdom on which systems of classification ultimately rested. It has been recognized as a definite entity, differing from every other, not by gradations, but by a more or less sharp break in the characters it possesses. But when, in the course of time, with larger and still larger collections of specimens to draw upon, it became evident that many of the supposed species were only varying forms of one and the same species, then the need for recognizing in some manner these variations first manifested itself, and the variety, subspecies or geographical race was the outcome. In ornithology, at least, these terms are synonymous, whatever significance may be

attached to them in other branches of biology. Subspecies are merely geographical groups of individuals within the species. They possess, each of them, all the characters of the species, and differ from each other only by degrees. It is assumed that subspecific characters are imposed by environment, because birds of desert regions are pallid, while those of rainy belts are dark in color; sedentary races have shorter wings than their migrating brethren, and other variations in dimensions or color-patterns are found in species of wide geographical distribution. This distribution must be practically continuous, and the subspecies may be compared to a metal chain (the species) of linked coins, some large, some small, variously patterned and marked, and probably of different shades of color. However much they may differ from each other, their edges, we must assume, will be practically alike, just as is the case where subspecies meet, and the specimens are half way in characters between two adjacent forms. We may imagine a chain of copper, or of iron, or of other metal, and in fact some species are spread in a veritable net-work of races over the face of the continents.

Species may closely resemble each other—as silver does nickel for instance—and yet be distinct species, because no specimens of intermediate characters occur, while subspecies at the ends of a long and unbroken series may bear little resemblance to one another, and still be subspecies. This, in a very general way, expresses the modern idea of species and subspecies.

ORIGIN OF SUBSPECIES.—Whatever the subspecies may be at the present time, the roots of their origin reach into the past, the current theory being that they are incipient species. To-day they are a series of intergrading forms; to-morrow, geologically speaking, the chain may be broken and each end become thereby a full species. The break, probably, will be, and has been, a gradual one, and the many local conditions making for differentiation may be summed up under the term environment. Whether the forms are separated through geographic, climatic, or bionomic isolation is a matter for speculation; the result will be the same, and given an accumulation of minute inherited differences, the species, in time, will evolve. The mutation theory, according to which new forms spring into existence at a bound,

upsets the idea of evolution by slow degrees, but while it is in complete accord with twentieth century rapidity, it is, after all, only another theory, as yet neither proved nor disproved.

Climate is claimed to be a most potent factor in the differentiation of races and species, but I often wonder if food is not of more importance. It may well be that in desert regions the struggle for existence among animal forms tends to bleach and stunt them, there being no surplus energy for the production of pigment or tissue. It is known that food has a marked influence on the plumage of caged birds. Certain diets inaugurated prior to moults produce certain colors in canaries and many wild species of birds, when caged, never reassume the brilliant colors of their free brethren—the Purple Finch (*Carpodacus purpureus*), for instance—because, doubtless, some ingredient of their normal food is lacking in the cage diet. As a species in the wild state spreads out into new areas, we may well suppose that new food acting from within, rather than climate acting from without may be the more potent influence in effecting plumage variations.

NAMING OF SUBSPECIES.—While it is an undisputed fact that variations exist, it is, unfortunately, largely a matter of opinion as to how many varieties or races of a species should be named. It is the naming of every variation, no matter how trivial, by experts of narrow horizon, and by careless amateurs, that discredits the trinomial system. Then, too, the importance of even the reputable races has been too much exaggerated in type by elaborate presentation of starveling facts, and it is not surprising that he who reads the literature of the day should be in doubt whether the species or the subspecies is the more important of the two, and wonders whether, after all, there is any difference between them. Many of the discoveries of new races consist merely in somebody giving a name to characters that have been noticed by earlier observers. Somebody will have written, perhaps, in this wise: "In the series before me I find several birds from A that are rather deeper colored than those from B;" and a few years later somebody else describes the birds from A as a new subspecies. In this way the names multiply indefinitely, for after enough races have been "discovered" to fill all the

known faunal areas, new areas are then theoretically set off to fit the new races, and there is apparently no end to the process, which can ultimately end only in perplexing confusion. Names that are not *useful* handles for facts ought eventually to find their way into the already mountainous junk heap of synonymy, a storm centre around which rage the windy disputes of the systematists..

It is unfortunate that the element of personal opinion is so large a one in the giving of names, and to offset, in a measure, personal bias, the Nomenclature Committee of the A. O. U. undertakes to pass judgment on the newly described races of North American birds. Of course "official" acceptance or rejection by such a court is not necessarily final, but at least its rulings ought to have weight. With the millenium, we may have an international committee, automatic in its decisions !

With the growth of the subspecies has come the inevitable growth of its name and a tautonomy or repetition of the name of the typical race (the form from specimens of which the species was first described) has become current, creating some confusion in some minds. Take, for instance, the American Robin as an illustration. The species is known as *Merula migratoria*, and there is now, in our Check-List, a western variety and a southern variety. The originally described northern bird being merely a portion or geographical race of the species, has been sometimes called *typica*, or *vera*, to distinguish it from the western race, *propinqua*, and the southern race, *achruster*. Latterly it has been customaay to write *Merula migratoria migratoria*, *M. m. propinqua* and *M. m. achruster*, in order to clearly distinguish the three geographical races. The Robin, wherever found on our continent, is the American Robin, *if* we do not try to discriminate beyond the species ; but if we do recognize subspecies, to be consistent in our vernacular names, we should speak of the Northern American Robin, the Western American Robin, and the Southern American Robin. It is only a slipshod adaptation of the vernacular to the trinomial idea that permits of any other course, and why should we strain at the vernacular guat and swallow the camel of scientific tautonomy ?

SUMMARY.—From what I have already written it should be evident that a subspecies of to-day is something different from a species, and something that it is convenient to name. Aside from downright blunders, there are, it seems to me, two abuses of the trinomial that greatly detract from its value: one is naming at sight every variation, and the other is, naming races the variations *within* which are considerably overlapped by adjacent races already described. As an example of the first mentioned abuse we have some of the pallid or desert races that bleach in the sun for a season, although the new plumage is as dark as that of birds of humid areas. There is no transmission of paleness from parent to offspring, and I doubt whether even the term "ontogenetic" can be applied to such subspecies. This is not saying that there are not good phyllogenetic subspecies in which paleness *is* transmitted, but I believe many of the pallid races now recognized are not deserving of a name. The second abuse is what is commonly called "naming the intermediates," and many examples of this might be cited. Between Maine and Florida, for instance, three races of the Downy Woodpecker (*Dryobates pubescens*) and three of the Maryland Yellowthroat (*Geothlypis trichas*) are now named. In either of these species the race in Florida may, perhaps, be recognized as different from that in Maine, but inasmuch as many Florida specimens are indistinguishable from many Maine examples, naming the intergrading or intermediate birds of the intermediate region only tends to create confusion without a compensating advantage. It seems to me that we ought to be able to think of subspecies approximately as circles on the map, just touching at their peripheries; "naming the intermediates" is like describing circles with central points at the periphery of each from which new circles are described. A maze of lines results in the one case and a horde of new "intermediates" in the other. A leaning toward one or the other of two very closely allied races may be made out, but with three or more races, in scarcely differing geographical areas, all the characters are blurred and names come to mean nothing, because the "intermediates" outnumber the typical specimens. It has been truly said that in naming intermediates "we bridge the difficulty by doubling it."

A great deal more might be said in illustration of the points I have touched upon. Systematic ornithology need not be snowed under with names, and it is incumbent on the younger generation of students to correct and avoid repeating the errors of the past. If trinomialism is to survive it must prove its utility, whatever view may be taken of the subspecies. Facts do not cry out to be named, and names can only survive when there is a general demand for them. This is as true in science as elsewhere, and to needlessly burden the much-suffering scientific world with more names is a crime for which, alas! there is no adequate punishment.

NEW YORK, N. Y.

Birds of Halton County, Ontario.

—:O:—

ALLAN BROOKS.

All the species here enumerated were observed within a radius of ten miles of Milton.

1. Horned Grebe. Scarce migrant.
2. Pied-billed Grebe. Scarce migrant.
3. Loon. Scarce migrant.
4. Herring Gull. Scarce migrant.
5. Bonapart's Gull. One large flock observed.
6. American Merganser. Scarce migrant.
7. Hooded Merganser. Tolerably common migrant.
8. Mallard. Scarce migrant.
9. Black Duck. Scarce migrant.
10. Wood Duck. Scarce. Said to breed in Nassagaweya.
11. American Goldeneye. Rare migrant.
12. Canada Goose. Scarce migrant.
13. Great Blue Heron. Tolerably common and breeding.
14. American Bittern. Scarce migrant.
15. Sandhill Crane. Observed two, April, 1882. They were flying low and had apparently risen from a sandy field.
16. Sora. Scarce summer resident.
17. American Woodcock. Scarce summer resident.
18. Wilson's Snipe. Tolerably common migrant.
19. Least Sandpiper. Only once observed.

20. Greater Yellow-legs. Scarce autumn migrant.
21. Solitary Sandpiper. Tolerably common migrant.
22. Bartramian Sandpiper. Once observed in May and once in July
23. American Golden Plover. Fall migrant.
24. Killdeer Plover. Common summer resident.
25. Spotted Sandpiper. Common summer resident.
26. Bob-white. Occasional only.
27. Ruffed Grouse. Tolerably common resident.
28. Passenger Pigeon. Scarce. Noticed a few pairs breeding near
Campbellville in 1886.
29. Mourning Dove. Scarce summer resident.
30. Marsh Hawk. Tolerably common migrant.
31. Sharp-shinned Hawk. Common migrant.
32. Cooper's Hawk. Common migrant. May breed.
33. American Goshawk. Scarce fall and winter migrant.
34. Red-tailed Hawk. Tolerably common resident.
35. Red-shouldered Hawk. Common summer resident.
36. Swainson's Hawk. Rare. One taken October, 1883, an adult
of dark phase.
37. Broad-winged Hawk. Scarce migrant.
38. American Rough-legged Hawk. Scarce migrant.
39. Duck Hawk. Scarce migrant.
40. Pigeon Hawk. Scarce migrant.
41. American Sparrow Hawk. Common summer resident.
42. American Long-eared Owl. Scarce winter visitant.
43. Saw-whet Owl. Scarce winter visitant.
44. Screech Owl. Scarce winter visitant.
45. Great Horned Owl. Scarce winter visitant.
46. Osprey. Scarce migrant.
47. Yellow-billed Cuckoo. Scarce summer resident.
48. Black-billed Cuckoo. Common summer resident.
49. Belted Kingfisher. Common summer resident.
50. Northern Hairy Woodpecker. Common resident.
51. Downy Woodpecker. Common resident.
52. Yellow-bellied Sapsucker. Common migrant, and a few re-
mained to breed.
53. Pileated Woodpecker. Only one pair observed.
54. Red-headed Woodpecker. Common summer resident.
55. Red-bellied Woodpecker. Twice observed, Aug. and October.
56. Northern Flicker. Common summer resident.
57. Whip-poor-will. Scarce summer resident.
58. Nighthawk. Common summer resident.
59. Chimney Swift. Common summer resident.
60. Ruby-throated Humming-bird. Common summer resident.
61. Kingbird. Common summer resident.
62. Crested Flycatcher. Common summer resident.

63. Phoebe. Common summer resident.
64. Wood Pewee. Common summer resident.
65. Yellow-bellied Flycatcher. Scarce migrant.
66. Least Flycatcher. Common migrant.
67. Prairie Horned Lark. Common and breeds.
68. Blue Jay. Common resident.
69. American Crow. Common resident.
70. Bobolink. Common summer resident.
71. Cowbird. Common summer resident.
72. Red-winged Blackbird. Scarce summer resident.
73. Meadowlark. Common—occasionally seen in winter.
74. Baltimore Oriole. Common summer resident.
75. Rusty Blackbird. Common migrant.
76. Bronzed Grackle. Common summer resident.
77. Pine Grosbeak. Irregular winter visitant.
78. Purple Finch. Common. A few remain all winter.
79. American Crossbill. Irregular, migrant, seen in large flocks in June, 1886, but does not breed.
80. White-winged Crossbill. Rare winter visitor.
81. Redpoll. Irregular winter visitor.
82. Hoary Redpoll. Rare winter visitor.
83. American Goldfinch. Common—a good number remain all winter.
84. Pine Siskin. Irregular winter visitor.
85. Snowflake. Common winter visitor.
86. Vesper Sparrow. Common summer resident.
87. Savanna Sparrow. Tolerably common summer resident.
88. White-crowned Sparrow. Common migrant.
89. White-throated Sparrow. Common. Breeds in Nassagaweya and Nelson Townships.
90. Tree Sparrow. Tolerably common winter visitant.
91. Field Sparrow. Scarce summer resident.
92. Chipping Sparrow. Common summer resident.
93. Junco. Common. Breeds. A few stay all winter.
94. Song Sparrow. Common summer resident.
95. Swamp Sparrow. Scarce migrant.
96. Lincoln's Sparrow. Scarce migrant.
97. Fox Sparrow. Tolerably common migrant.
98. Towhee. Tolerably common summer resident.
99. Rose-breasted Grosbeak. Tolerably common migrant.
100. Indigo Bunting. Tolerably common summer resident.
101. Scarlet Tanager. Tolerably common summer resident.
102. Purple Martin. Confined to towns.
103. Cliff Swallow. Common summer resident.
104. Barn Swallow. Common summer resident.
105. Tree Swallow. Tolerably common summer resident.
106. Bank Swallow. Scarce migrant.

107. Rough-winged Swallow. Scarce migrant.
108. Cedar Waxwing. Common summer resident. A flock once
observed in winter.
109. Northern Shrike. Tolerably common winter visitant.
110. Migrant Shrike. Common summer resident.
111. Red-eyed Vireo. Common summer resident.
112. Philadelphia Vireo. Scarce migrant.
113. Warbling Vireo. Common summer resident.
114. Yellow-throated Vireo. Scarce migrant.
115. Blue-headed Vireo. Tolerably common migrant.
116. Black and White Warbler. Common summer resident.
117. Nashville Warbler. Common migrant.
118. Orange-crowned Warbler. Scarce migrant.
119. Tennessee Warbler. Scarce migrant.
120. Parula Warbler. Common migrant.
121. Cape May Warbler. Scarce migrant.
122. Yellow Warbler. Common summer resident.
123. Black-throated Blue Warbler. Common migrant.
124. Myrtle Warbler. Common migrant.
125. Magnolia Warbler. Common migrant.
126. Cerulean Warbler. Scarce migrant.
127. Chestnut-sided Warbler. Common summer resident.
128. Blackburnian Warbler. Tolerably common migrant.
129. Bay-breasted Warbler. Tolerably common migrant.
130. Blackpoll Warbler. Common migrant.
131. Black-throated Green Warbler. Common migrant.
132. Pine Warbler. Tolerably common migrant. The first War-
bler to arrive in the spring, as a rule.
133. Palm Warbler. Common migrant.
134. Oven-bird. Common summer resident.
135. Water-thrush. Tolerably common summer resident.
136. Mourning Warbler. Scarce summer resident.
137. Maryland Yellow-throat. Scarce summer resident.
138. Wilson's Warbler. Scarce migrant.
139. Canadian Warbler. Tolerably common migrant.
140. American Redstart. Common on migrations, and a few
remain to breed.
141. American Pipit. Common migrant.
142. Catbird. Common summer resident.
143. Brown Thrasher. Tolerably common summer resident.
144. House Wren. Common summer resident.
145. Winter Wren. Tolerably common summer resident.
146. Brown Creeper. Common. Occasionally stays all winter,
and may breed.
147. White-breasted Nuthatch. Common resident.

148. Red-breasted Nuthatch. Tolerably common. Occasionally stays all winter, and may breed.
149. Chickadee. Common resident.
150. Golden-crowned Kinglet. Common migrant. Once seen in winter.
151. Ruby-crowned Kinglet. Common migrant.
152. Wood Thrush. Tolerably common migrant.
153. Wilson's Thrush. Common summer resident.
154. Olive-backed Thrush. Tolerably common migrant.
155. Grey-cheeked Thrush. Tolerably common migrant.
156. Hermit Thrush. Common on migrations, and a few breed.
157. American Robin. Common summer resident. Occasionally seen in winter.
158. Bluebird. Common summer resident.

—SUMAS, B. C.

Robin Notes.

JAMES H. FLEMING.

On September 24th, 1905, I noticed in my garden, in Toronto, a flight of Robins. These were not the summer residents, as they had left some time before, but new arrivals, and were unusually tame, giving me an excellent opportunity to examine them. I was attracted by the display of plumage—birds with red breasts and ones with frosted chestnut; some with patches of white on the ends of the outer tail feathers, others with the white reduced to a narrow line, invisible a few feet away, and some, I was able to see, were in pin feathers on the head and neck, and one was a partial albino. There were also young birds, some with short tails and spotted plumage. Altogether it seemed as if all the available Robin plumages had been brought together for inspection. Next morning the garden was empty, and no other flight was noticed except a few stray birds till October 15th, when a small flight arrived, among them a young bird, which remained about till the 19th. This bird was in changing plumage, the head and neck being covered with pin feathers, and the spots still remained on the upper breast. On the 20th, a young one in still more juvenile plumage was pro-

cured ; it was fully feathered, the upper breast being thickly spotted, and the feathers of the back still showed the black ends and white shafts. There could not have been more than two weeks' difference in the age of this twentieth of October bird and one in my collection taken August 17th of a previous year, and yet a bird taken two months later was not more than two weeks older. The birds brought up here were not later than usual, that is, in time for the cherries, and so late an appearance of young birds can only be accounted for in two ways : we know that the autumn was very open, and I heard reports of very late broods of Robins in the Lake Superior country, but we also know that the spring of 1905 was cold and wet ; if reports are correct many waders were unable to hatch their eggs, and came south early, so it is possible the Robins, too, were unable to raise their first brood and took advantage of the favorable weather of the late summer to even things up.

—TORONTO, Ont.

BIRDS OF WELLINGTON COUNTY.

Corrections and Additions.

—O—

A. B. KLUGH.

Acanthis hornemanni exilipes. Hoary Redpoll. The specimens recorded under this species in my list in Ont. Nat. Sc. Bulletin No. 1 prove to be *Acanthis linaria*, with immaculate rumps.

Nycticorax nycticorax naevius. Black-crowned Night Heron. A specimen in adult plumage was taken in Guelph some 12 years ago.

Pelidna alpina pacifica. Red-backed Sandpiper. A specimen of this species collided with a telegraph wire near Guelph on October 12, 1905, and was brought to Mr. Moore by one of his pupils. It is now in my collection.

Dendroica caerulescens. Black-throated Blue Warbler. Common migrant and scarce summer resident. By some error in printing the list this species was omitted, and its number (162) was given to *Dendroica coronata*, while the number of *D. coronata* (163) was omitted.

Telmatodytes palustris. Long-billed Marsh Wren. This is a species we have long looked for in the County, but never with success until June 29, 1905, when I saw one in a marsh half-way between Guelph and Puslinch Lake. On July 19 I took one and saw another in a small marsh east of Puslinch Lake. These are, so far, our only records for the county. The number of species recorded in the County now stands at 199.

—GUELPH, Ont.

Extracts from Notes on Natural History.

—O—

C. K. CLARKE, M.D.

On Xmas morning (1903) as I walked far out on the road to Lemoines Point, for a time it seemed as if the representatives of field and forest had either flown to the sunny South or were enjoying their Xmas dinner at home. The tide of life that runs so strongly along this highway during most of the year was at its lowest ebb, and yet there was something to be seen. By the old Vanorder block house a weasel, clad in the royal ermine of winter, glided noiselessly across the path in eager search for field mice or squirrels, and when I passed the ghastly skeletons of the *Phragmites* in Cataraqui Marsh, a belated rickeree announced the fact that our Lady of the Snows was hostess to several Red-winged Blackbirds who had loitered far too late for normal members of this dusky family. I have seen them many times this winter and cannot understand their presence. A little further along the road a pair of Prairie Horned Larks greeted me. They have frequented this particular spot all year, and will no doubt stay the winter through, breeding before the snow has left the ground. Their first eggs will almost inevitably be frozen, but Prairie Horned Larks are evidently believers in tradition, and as they have gradually reached here since the forests were cleared, it will, in all probability, take them some years yet to modify their breeding habits to suit the climate. I have discovered eggs almost ready to hatch on the third of April, but the general experience is to find frozen eggs in the latter part of March. I am a devoted admirer of our Horned Lark, although its song is any thing but melodious, always suggesting a want of oil, so creaking is its character, and yet its family is the American representative of the true Larks.

John Burroughs, in a delightful note, describes the song of the Shore Lark when it flies to a great height and then flutters to the ground, and in a feeble way intimates the marvellous soaring and music of its European cousin, and this very thing was described by Hearne in 1795. Speaking of the birds in the

far North, he says: "Larks of pretty variegated color frequent these parts in summer, and always make their appearance in May, build their nests on the ground, usually by the side of a stone at the root of a small bush, lay four speckled eggs and bring forth their young in June. At their first arrival, and till the young can fly, the male is in full song, and, like the Sky Lark, soars to a great height and generally descends in a perpendicular direction near their nest. Their note is loud and agreeable, but consists of little variety, and as soon as the young can fly they become silent and retire to the southward early in Fall. They are impatient of confinement, never sing in that state, and seldom live long."

Hearne made many quaint observations on northern birds and animals, and proved a much more accurate observer than some of the dictatorial Britishers who followed him, and who found their last representative in the late Duke of Argyle, whose strictures on our beautiful birds have always stuck in my crop.

We must make haste, though, with some of the life histories of our birds, as many of the species will be exterminated in the near future, particularly the so-called birds of prey, which, as a matter of fact, should not be regarded as bandits. The majority of them are fairly entitled to the name of farmers' friend, and yet practically every man's hand is against them. If it were not that the owls were largely nocturnal in their habits they would be exterminated in a few months—as it is, if one but happens to show his face for an hour, he almost certainly finds his way to the taxidermist. The little screech-owl (*Megascops asio*) holds his own, though, in spite of guns, boys, and thoughtless men, and at Rockwood is rapidly increasing in numbers. Almost any evening their weird and fantastic notes may be heard in the grounds. In the spring time I always move a mental vote of thanks to Megascops, as our fruit trees and shrubs are rarely girdled by the field mice, while my neighbors, who do not protect their owls, and incidentally their trees, suffer severely. There are only a few days in the summer during which the Screech Owls lose their heads, that is when their young are able to fly. At that time the parent birds invariably develop a sort of midsummer madness and show their indiscretion by attacking

any one passing. Every year several come to grief in our grounds as a result of their temerity, in fact two actually injured themselves last summer while making assaults on persons strolling in the grounds. These birds destroy enormous numbers of field mice, as is easily ascertained by a brief examination of the pellets of bones and skin regurgitated and dropped at the base of the "owl" trees. When mice fail, especially in the winter time, English Sparrows are always a satisfactory substitute, and in my walks I often come across the mute evidence of the sparrow tragedy. The type ordinarily met with here is the grey, although last summer I came across a well-marked rufus specimen, a type very common in the South.

The Long-eared Owls, being nocturnal in their habits, are rarely seen unless by the observer who knows where to look for them. They are not uncommon about Kingston, breeding here regularly in thickets, near a marsh, and I have time and again been astounded by evidences of the wholesale slaughter carried on by them among mice. I have seen the ground in some thickets literally covered by pellets, and it is no exaggeration to say that hundreds were in view in a very small space. My last visit to one particular thicket, where I knew a pair of these beautiful birds bred, revealed something else—the body of one of the owls. Some thoughtless pot-hunter had shot it and thrown it away after committing the wanton act.

The same heartless treatment was accorded the Short-eared Owls in Cataraqui Marsh. I cannot understand the killing mania being so highly developed among boys and men. To illustrate this point: In the winter of 1902 a migration of Snowy Owls took place, and these birds were comparatively common in Ontario and some parts of the United States. Thousands were shot. One taxidermist in Kingston alone received sixteen specimens. The Snowy Owl, though, is a mighty hunter, and while he does little good, is comparatively harmless, as he lives chiefly on hares and squirrels.

The owls have few friends and are as thoroughly detested by smaller birds as it is possible to be. If, by chance, an owl gets abroad in the daylight, he is persistently mobbed by every

feathered chatterer in the neighborhood. No wonder he has had to cultivate the appearance of absolute indifference. Nothing is more amusing than to hear the angry discussion of an owl by a hundred small birds. Their fury and indignation surpass all reason, and they never rest until the unwelcome visitor takes his departure.

I fear many of the owls would escape my notice if it were not for the hubbub kicked up by the protesting small birds.

None of the hawks, with, perhaps, the exception of the beautiful little American Sparrow Hawks and the Marsh Hawks, are common about Kingston, although a few Red-shouldered Hawks are occasionally met with. During the time of migration we have many of the different type represented, even the fierce Peregrines and Goshawks following the wild ducks on their way to the South. A magnificent Goshawk came to an untimely end a few seasons ago as the result of an attack upon some decoys set out before a blind on Amherst Island. He dropped like a bullet from mid-air on the counterfeit presentment of the Bluebill and met instant death at the hands of a sportsman, who hardly knew what had happened, so sudden was the complete tragedy. These Goshawks are fierce birds, and I have seen one make off with a full-grown Ruffed Grouse with apparent ease.

The Eagles about Kingston are slowly yielding to the pressure of circumstances, and last year one of the trees patronized for many years by a pair of eagles was converted into cordwood, in spite of a request to the woodman to spare that tree. Another well known breeding spot was deserted, so I fear the end is coming.

The Ospreys or Fish Hawks are also diminishing, although a few rampikes still hold their quaint nests.

—TORONTO, Ont.

Trinomials.

—o—
P. A. TAVERNER.

“Most Englishmen regard species as fixed quantities to be accepted or rejected according to circumstances. The hereditary conservatism of Englishmen has for the most part prevented them from realizing the important fact that if the theory of evolution be true there must always be species in the process of being evolved or differentiated. They have accepted the theory of evolution without accepting the inevitable consequences.

“The hereditary progressive tendency of American thought has prevented the thought of that country from committing the same blunder, and with them the recognition of subspecies is as much a matter of course as the admission that many species, even amongst those whose range of geographical distribution is very wide, show no tendency to split up into local races.

“In this case no reasonable man can doubt that the Americans are perfectly right, and the majority of Englishmen hopelessly wrong.” From Seebohm, *Geographical Distribution of the Charadriidae*, preface to Part V.

That the above from the pen of the great authority on the plover is correct I do not think any one can doubt. The wisdom of the recognition of incipient species is manifest. Such things are, and therefore it is absurd and childish not to recognize them; but, the question is where shall we stop? When a species has started to vary in any one direction, individuals may exist in every possible stage of transition, and there will be just as many varieties as there are individuals in the race. Are we then to give each and every one of them a separate name? In that case, every specimen will be a type; yet such is the logical corollary to the foregoing theorem. Practically the only limit at present placed upon such work lies in the limitations of observation and exact definition in experts specially trained to discovering minute variations and differences. The absurdity of it becomes evident when even such experts cannot separate their own sub-species without knowledge of the locality from whence

they came. Under this ruling, should certain of these forms be storm blown, as many birds are, into another locality they change their name and become transformed into another variety. The marvels of science are wonderful, and truth is stranger than fiction.

On the other hand, until every recognizable variation is studied in relation to all others, and to its environment, the truth is not all told. The only point upon which there can be any argument is, how far it is expedient to go in the naming of all these forms. That there is need for some of it cannot be doubted, but has it not in the past been much overdone, and is the creation of new sub-specific names that but one or perhaps two experts, specially trained to those particular forms, can recognize for the best interests of science?

—DETROIT, Mich.

The Breeding of the Pine Siskin in Wellington County, Ont.

—o—
A. B. KLUGH.

In a brief note (Auk XXII, p. 415, 1905) I have already recorded the breeding of the Pine Siskin (*Spinus pinus*) in the vicinity of Guelph. I here propose to give a more detailed account of this occurrence.

All through the winter of 1904-'05 Pine Siskins were abundant in Wellington County. I saw them in flocks of from 40 to about 150. They fed chiefly on the seeds of Cedar (*Thuya occidentalis*) and Yellow Birch (*Betula lutea*). On March 6 I heard them singing, and they appeared to be mating.

Early in April the flocks broke up and they were generally distributed over the county in pairs and groups of three or four individuals.

On April 6 Mr. John Allan jr. saw a pair of Siskins carrying pigs' bristles from his barn-yard to a swamp about 350 yards away. One of the birds appeared to be doing all the work, but the other always accompanied it. On April 7 Mr. Allan saw two pairs carrying nesting material. On April 20 Mr. Howard Skales found a nest near Mt. Forest, in the bushy top of a little

Spruce about 10 feet tall. It was composed exteriorly of dead pine twigs; interiorly of grass, woven into a compact wall and lined with grass, fine shreds of bark, horse-hair and cow-hair. On April 25 Mr. Skales found a nest, composed as above, placed at the end of a horizontal branch of a larger Spruce, and about 7 feet from the ground.

On May 7 Mr. F. Norman Beattie found a nest in a tall Balsam in a grove at Guelph. This nest was placed in a little clump of twigs at the end of a horizontal branch, about 25 feet from the ground. It was composed exteriorly of Balsam twigs, with a few Cedar twigs, and a piece of stout cord; the walls were composed of grass, bark fibres and rootlets, and it was lined with cow-hair. It contained two eggs of the Siskin and two of the Cowbird.

On May 5 I had seen Siskins carrying nesting material into a White Spruce on the College campus, and on May 8 I found the nest about 13 feet from the ground in this tree. It was composed of a few Spruce twigs (on the exterior), grass and grass roots, lined with a little wool and an inner lining of hair. It contained one Siskin's egg and two Cowbird's. On the ground beneath lay a broken Siskin's egg. On May 11 Mr. Klinck found a nest in a White Spruce on the College campus, a few yards from the tree above mentioned.

On June 2 Mr. Howard Skales found two nests in which young had been raised. Both were placed in the bushy tops of Spruce trees, and were built in the same manner as the first nest he found. One contained a broken egg of the Pine Siskin and a Cowbird's egg. The other was occupied by a Robin, which had built a wall of mud round the top of the nest, and by June 13 had laid three eggs in it.

Early in June Mr. F. Norman Beattie found a nest at Guelph, and saw the Siskins feeding their young nearby.

The last date on which I saw Siskins at Guelph was June 7, and they were last seen at Mt. Forest, by Mr. Skales, June 21.

As far as I can ascertain, Pine Siskins were not found breeding anywhere in Ontario, outside of Wellington County. None were observed during the breeding season at London, Madoc, Walton, Forest, or in Oxford County.

—GUELPH, Ont.

Range of the Sharp-tailed Grouse in Eastern Canada.

—o—

JAMES H. FLEMING.

The Sharp-tailed Grouse, so well known in the Canadian West as the Prairie Chicken, is represented in Ontario by two forms: one the well known Prairie Sharp-tailed Grouse, *Pedioecetes phasianellus campestris*, of Manitoba, is of comparatively recent introduction, coming east after the building of the Canadian Pacific Railway, and occurring at Port Arthur, at the head of Lake Superior, and possibly elsewhere. The Northern Sharp-tailed Grouse, *Pedioecetes phasianellus*, is the form of most interest, and of which less is known, darker than the prairie bird it is not difficult to distinguish.

On the east coast of Hudson's Bay, Mr. A. P. Lowe gives lat. 57° as the northern limit of its range and says it winters at Great Whale River. He took a set of eggs on May 20, 1889, at Fort George, on James Bay. These eggs are a dark coffee brown, darker than any sets I have seen from Manitoba. According to Bishop Newnham the Sharp-tails arrive at Moose Factory, James Bay, from the north-east, usually when the marsh hay is being gathered, and are shot in considerable numbers. They frequently stay all winter and leave in the spring. At Lake Abittibi they are said to occur pretty regularly, in October. On Lake Timiskaming they do not seem to occur regularly, though the bird is frequently found there in October.

In 1896 a flight passed south of the usual limits into the districts of Parry Sound and Muskoka. At Beaumauris, on Lake Muskoka, one was taken on October 10th and examined by Mr. P. A. Taverner; others were reported at Huntsville, Port Cockburn and Bracebridge, in Muskoka, at Emsdale and elsewhere in Parry Sound. The flight was not large, and had disappeared by the end of October, assisted, no doubt, by the considerable flight of Goshawks and Golden Eagles that came into Ontario over probably the same route as the Grouse.

—TORONTO, Ont.

MIGRATION REPORT

OF THE

Wellington Field Naturalist Club.

STATION - GUELPH, ONT.

March 1, 1905—March 1, 1906.

COMPILED BY THE SECRETARY.

[NOTE—All remarks apply to this year only. C—common; F—frequent; S—scarce; R—rare.]

NAME OF BIRD.	First Seen	Last Seen.	Abundance	Did it breed	REMARKS.
Snowflake		Mar. 7	C	No	
Snowflake	Nov. 15		F		
Redpoll		Mar. 23	S	No	
Pine Siskin		June 7	A	Yes	Bred commonly in the
Pine Siskin	Jan. 10		R		[vicinity of Guelph]
Tree Sparrow		April 26	C	No	
Tree Sparrow	Dec. 4		S		
Prairie Horned Lark		Sept. 27	C	Yes	
Prairie Horned Lark	Feb. 4		C		
Am. Robin	Mar. 18	Sept. 30	C	Yes	2 wintered at Guelph
Bluebird	Mar. 18	Sept. 30	C	Yes	
Song Sparrow	Mar. 22		C	Yes	
Purple Finch	Mar. 22		F	Yes	A few seen winter '05-'06
Am. Sparrow Hawk	Mar. 22		F	Yes	
Meadowlark	Mar. 23	Oct. 13	C	Yes	One seen in winter
Red-winged Blackbird	Mar. 23		C	Yes	
Bronzed Grackle	Mar. 24		C	Yes	
Killdeer	Mar. 24	Sept. 29	C	Yes	
Flicker	Mar. 27	Sept. 29	C	Yes	
Phoebe	Mar. 27	Oct. 9	C	Yes	
White-rumped Shrike	Mar. 27		S	Yes	
Cowbird	Mar. 28		C	Yes	
Gt. Blue Heron	Mar. 29		C	Yes	
Red-shouldered Hawk	Mar. 29		C	Yes	
Vesper Sparrow	Mar. 29	Oct. 13	C	Yes	
White-throated Sparrow	April 5	Oct. 10	C	Yes	
Towhee	April 5		F	Yes	
Winter Wren	April 6		F	Yes	
Herring Gull	April 6		C	No	
Hermit Thrush	April 8		F	No	
Yellow-bellied Sapsucker	April 8		C	Yes	C. migrant; R. breeder
Sharp-shinned Hawk	April 8		S	Yes	
Ruby-crowned Kinglet	April 11	May 17	C	No	

MIGRATION REPORT.

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NAME OF BIRD	First Seen	Last Seen.	Abundance	Did it breed	REMARKS.
Ruby-crowned Knight....		Oct. 10	C		
Savanna Sparrow.....	April 11		C	Yes	
Chipping Sparrow.....	April 11	Sept. 27	C	Yes	
Scaup Duck	April 12	May 20	C	No	
Buffle-head	April 12	May 13	S	No	
Black Duck.....	April 12	April 23	S	No	
Horned Grebe.....	April 12	May 13	C	No	
Canada Goose.....	April 12		C	No	
Pied-billed Grebe.....	April 12	Sept. 30	C	Yes	
Mourning Dove.....	April 12		C	Yes	
Am. Crossbill	April 13	May 1	S	No	
Kingfisher	April 14		C	Yes	
Rusty Blackbird.....	April 22	May 4	C	No	Commoner than usual in
Am. Coot	April 23		R	No	[spring]
Swamp Sparrow	April 23		C	Yes	
Loon.....	April 23	April 23	R	No	
Red-breasted Merganser.	April 23	April 23	S	No	
Lesser Scaup Duck	April 23	April 23	R	No	
Am. Bittern.....	April 23		C	Yes	
Marsh Hawk	April 23		C	Yes	
Pintail.....	April 23	April 23	R	No	
Barn Swallow.....	April 23		C	Yes	
Tree Swallow.....	April 23		C	Yes	
Broad-winged Hawk	April 24	May 3	S	No	
Catbird	April 26		C	Yes	
Chimney Swift.....	April 26		C	Yes	
Cedar Waxwing.....	April 27		C	Yes	
Wood Thrush.....	April 27		F	Yes	
Blk-th'd Green Warbler..	April 27	Sept. 27	C	Yes	
Brown Thrasher.....	April 28		S	Yes	
Water Thrush	April 28		C	Yes	
Spotted Sandpiper	April 28		C	Yes	
Myrtle Warbler.....	April 29	Oct. 13	C	Yes	C. migrant; R. breeder
Black & White Warbler..	May 1		C	Yes	
Cliff Swallow	May 1		S	Yes	
Nashville Warbler.....	May 3		C	Yes	C. migrant; S. breeder
House Wren.....	May 3		C	Yes	
Yellow Warbler.....	May 3		C	Yes	
Red-headed Woodpecker.	May 4		C	Yes	
Palm Warbler	May 5	May 8	S	No	
Baltimore Oriole.....	May 5		C	Yes	
Bobolink	May 5		C	Yes	
White-crowned Sparrow.	May 5	May 8	S	No	
Least Flycatcher.....	May 5		C	Yes	
Oven-bird	May 5		C	Yes	
Warbling Vireo	May 5		C	Yes	
Kingbird	May 5		C	Yes	
Cape May Warbler.....	May 5	May 6	S	No	Commoner than in any
Golden-crowned Kinglet.		May 5	C	No	[previous year]
Bank Swallow	May 6		S	Yes	
Wilson's Thrush.....	May 6		C	Yes	

NAME OF BIRD.	First Seen	Last Seen.	Abundance	Did it breed	REMARKS
Maryland Yellow-throat	May 6		C	Yes	
Rose-breasted Grosbeak..	May 6		S	Yes	
Am. Goldeneye		May 6	S	No	
Holboell's Grebe.....	May 9		R	No	
Am. Redstart	May 9		C	Yes	
Chestnut-sided Warbler..	May 9		C	Yes	
Canadian Warbler.....	May 11		C	Yes	
Magnolia Warbler.....	May 11		C	Yes	C. migrant ; S. breeder
Blk-th'td Blue Warbler...	May 11		C	Yes	C. migrant ; S. breeder
Parula Warbler.....	May 11		S	No	
Scarlet Tanager.....	May 13		F	Yes	
Crested Flycatcher.....	May 13		C	Yes	
Wood Pewee.....	May 13		C	Yes	
Mourning Warbler.....	May 13		S	Yes	
Blue-headed Vireo	May 13		S	No	
Red-eyed Vireo	May 13		C	Yes	
Old Squaw.....	May 13		R	No	
Tennessee Warbler.....	May 13		R	No	
American Merganser		May 13	F	No	
Indigo Bunting.....	May 16		C	Yes	
Bay-breasted Warbler....	May 16		S	No	
Ruby-th'd Hummingbird	May 17		F	Yes	
Green Heron.....	May 17		S	Yes	
Pine Warbler	May 19		R	No	
Red-breasted Nuthatch...	May 20		S	No	
Nighthawk.....	May 24		C	Yes	
Black-billed Cuckoo.....	May 27		C	Yes	
Purple Martin.....	June 19		R	Yes	
Virginia Rail	June 29		R	Yes	
Long-billed Marsh Wren.	June 29		R	Yes	
Black-poll Warbler.....		Sept. 27	F	No	
Fox Sparrow	Sept. 27		S	No	
Yellow-legs.....	Sept. 30		S	No	
Am. Osprey.....		Sept. 30	S	No	
Red-backed Sandpiper....	Oct. 12		R	No	
Northern Shrike.....	Dec. 26		R	No	
Am. Robin.....	Feb. 24				
Bluebird	Feb. 24				

Birds Not Seen at Guelph, but Seen in the County of Wellington.

[NOTE.—Records at Alma were taken by Mr. John Allan, jr.; at Mount Forest by Mr. Howard Skales.]

NAME OF BIRD	First Seen	Last Seen.	Abundance	Did it breed	Station	REMARKS
Whip-poor-will.....	May 27		F	Yes	Alma	
Yellow-bellied Flycatcher	June 3		F	Yes	Mt. Forest	
Olive-sided Flycatcher ...	June 3		R	Yes	Mt. Forest	
Solitary Sandpiper.....	Aug. 29	Sept. 3	R	No	Alma	
Wilson's Snipe.....	Sept. 30	Nov. 3	S	No	Alma	
Cooper's Hawk.....		Oct. 7	F	Yes	Alma	
Snowy Owl.....	Jan. 1		R	No	Mt. Forest	
Arctic 3-toed Wo'dpecker	Feb. 21		R	No	Alma	

Notes on the Cyperaceae of Ontario.

—O—
A. B. KLUGH.

Cyperus engelmanni, Steud.—I have received this from Miss A. Saunders, who collected it on Toronto Island, September 28, 1905. The only Station previously recorded for this species in Canada is Kingston, Ont.

Eleocharis intermedia, Schultes.—This species seems to be commoner in Ontario than has been supposed. I have seen specimens from Galt, where they were collected by Mr. W. Herriot, and Toronto and Cartwright, Ont., collected by Dr. Wm. Scott. I found it to be very abundant in wet sand round a spring near Colpoy's Bay, Bruce County, Ont. Only one station, (Belleville) has been previously recorded in Ontario.

Eleocharis rostellata, Torr.—Common in a sandy marsh at Oliphant, Bruce Co., Ont., August 14, 1905. The only Ontario station recorded is Galt, Ont.

Scirpus lineatus, Michx.—I found this species to be common along the border of a moist thicket, near Colpoy's Bay, Bruce Co., Ont., on August 13, 1905. This is the most northerly station, by some 100 miles, in Canada, and its occurrence here points to a rather marked Carolinian influence, which is further borne out by other components of the flora and fauna of this region.

Rhynchospora capillacea laeviseta, Hill.—Abundant in a sandy marsh and on the wet sand of the Lake Huron shore at Oliphant, Bruce Co., Ont., July 31, 1905. This is the first record for this subspecies in Canada. There are five Canadian stations, all in Ontario, recorded for the type. I have seen the type in the herbarium of Mr. W. Herriot, who collected it at Galt, Ont., July 21, 1901.

Scleria verticillata, Muhl.—I found this to be abundant in the wet sand of the Lake Huron shore, and common in the sandy marsh at Oliphant, Bruce Co., Ont., on August 23, 1905. This is another Carolinian unit in the flora of the base of the Bruce Peninsular. It is recorded in Canada only from Presquille Point, Lake Ontario, Toronto Island, and Galt, Ont.

Carex lurida flaccida, Bailey.—I have received this from Miss A. Saunders, who collected it on the shore of the Indian River, at Port Carling, Muskoka, Ont., September 2nd, 1905. This is the first record for this variety in Canada.

Carex aquatilis elatior, Bab.—I collected this variety in a wet situation near the shore of the Georgian Bay, at Cape Croker, Bruce Co., Ont., on August 16, 1905. This is the robust form of *C. aquatilis*, and is distinguished¹ from the species by being over 9 dm. in height and having very stout and densely flowered pistillate spikelets. It is probably common in Canada, but has always been referred to *C. aquatilis* (type).

Carex aquatilis virescens, Anders.—I found this variety to be common by the Oliphant Road bridge over the Pike River, near Wiarton, Bruce Co., Ont., July 31, 1905. This is the first record for Canada, and the third for America. This subspecies² has the scales short and pale, and hidden by the closely imbricated perigynia (instead of dark and nearly or quite equaling the perigynia as in *C. aquatilis*) thus giving the spikelets a pale green appearance. The sheaths and leaves of my specimens are more nodulose than in *C. aquatilis*.

Carex castanea, Wahl.—Frequent in drier portions of a sandy marsh at Oliphant, Bruce Co., Ont., July 31, 1905. This station is the furthest south in Canada.

Carex scirpoidea, Michx.—I have received this from Mr. John Dearness who collected it at French Bay, Bruce Co., Ont. This is the third record for Ontario and the station furthest north in Canada.

Carex sparganioides, Muhl.—Scarce at Indian Falls, Owen Sound, Ont. This is the north-western limit in Canada as far as known at present.

Carex straminea echinodes, Fernald.—I have received this from Mr. Jas. White, who collected it at Snelgrove, Ont., June 30, 1893. This is the second record for Canada, the other station being Wyoming, Ont.

—GUELPH, Ont.

1 See Fernald, Proc. Am. Acad. xxxvii. 496.

2 See Fernald, Proc. Am. Acad. xxxvii. 497.

On the Etymology of Plant Names

—o—
THEO. HOLM.

It is rather uncommon to see the etymology of plant names explained in botanical manuals. It would appear as if this science might be dealt with, and more properly so, in works of its own, in philological-botanical works, for instance. To study the origin of classical plant names implies, as a matter of fact, no small amount of both botanical and linguistic knowledge. The history of such names may date so far back that even the most scrupulous worker often feels himself unable to trace some name to its very source; or, even if the name be successfully traced, it is often a most difficult task at the same time to identify with absolute certainty the plant to which it was applied.

Many of the classical names that are now in use were originally applied to entirely different genera by the Romans and Greeks, and the retaining of such names in modern Botany, but applied to other plants, was only for the sake of their classical Latin or Greek origin as names; it is evident that the derivation of such misapplied plant-names becomes rather enigmatic. We all know that Virgil used such names as *Ligustrum*, *Carex* and *Juncus*, but we feel also certain that he did not mean the genera that now-a-days bear these names. Not a few names appear as if they were Latin, and their derivation is thus given in accordance with a verbal translation; but the real meaning remains, of course, totally obscure; such names were often constructed through latinization of French, German or Celtic popular plant-names, for instance, *Camelina*, *Humulus*, *Trollius*, *Aquilegia*, *Acer*, etc. Serious complications arise also when the names are merely anagrams, or where the author has made a composition of both Latin and Greek, as, for instance, *Galeorchis*. It becomes thus a most difficult task to explain the origin of plant-names, but it is often quite interesting, even if it may lead to controversies. Hooker is quoted for saying: "There is abundant room for the exercise of imagination in the derivation of names," and his words are only too true.

However, if we feel obliged to deal with this science, botanical etymology, and if we deem it a necessity to append such explanations of names to plant descriptions, there are some means through which assistance may be obtained. There is an old book by Linnæus, *Philosophia Botanica*, which the modern American botanist, as a rule, leaves untouched; it would be too pedantic to follow such an old thing. Nevertheless, if the gentlemen, who are now-a-days so busily engaged in making species or new combinations, would humble themselves to learn how to study the contents of this old book, the results of their "experiments" might fare better. In speaking of etymology, this work of Linnæus contains a vast amount of information. Thoroughly systematically as Linnæus used to treat the various branches of natural history, he classified the plant-names in such a way that it requires but little time to find his idea about the most probable explanation of a number of plant-names. Several interesting chapters about this same subject are also to be found in his *Critica Botanica*, and in his diary. Finally Elias Fries is the author of several excellent papers dealing with etymology of plant-names.¹ Besides these works we might also mention Ascherson's *Flora von Brandenburg*, in which the derivation of a number of names has been explained and the original source referred to.

It would thus appear as if the field is not a new one, and that there are some works in existence which may be consulted with great profit. But when we examine some certain and very recently published work on the flora of this continent, we feel surprised by the careless treatment of this particular branch of science, the etymology of the names. In the third edition, 1905, of the *Manual of the Flora of the Northern United States and Canada* by N. L. Britton, the reader meets with such problems in regard to descriptions and names, besides the derivation of these, that the general impression of the treatment altogether becomes very unfavorable. Considering the very recent date of this publication one should expect to find a thoroughly scientific and up-to-date treatment of the American plants; instead of that the book presents itself as a very crude piece of work, that should

1 *Botaniska Utflygter*. Stockholm, 1853.

never be recommended to students of Systematic Botany.¹ Let us, for instance, examine some of the explanations of the names in order to correct some of these errors, since the book has already become widely distributed, and even recommended for use by certain authorities within the Canadian Dominion. It would, however, require a good deal of space to correct them all, and we must, therefore, confine ourselves to only some of them; at the same time we shall try to arrange the corrections so as to give some examples of how derivations may be explained.

Many names have been explained by simply translating these, and the following may be mentioned: *Elatine* is said to be "fir-like, with reference to the leaves," but even if the Greek *elataë* means fir, we all know that this plant does not remind us of a fir. The *Elatine* of the Romans was, in accordance with Fries (l. c.) the section *Cymbalaria* of *Linaria*, derived from *elatos* in reference to the slender, creeping or prostrate stems, hence the name *Elatine*, which shows the same habit. About *Sedum* is said "to sit, from the lowly habit of these plants." Fries quotes Festus, who mentions that the Romans used to plant *sedum* (our genus *Sempervivum*) upon their roofs as a protection against stormy weather [*sedare tempestatem*], a derivation that seems more natural. *Valeriana*, "from *valere*, to be strong," but Linnæus says the genus was dedicated to

1 It is almost incredible that an author could allow so many and so grave botanical errors to pass uncorrected through three different editions. It certainly appears as if the descriptions have been written down regardless of the plants themselves. No botanist of this century would ever venture to describe *Corallorhiza* as a "rootparasite with coral-like branching roots." Gray, as early as 1857, described it correctly with "toothed coral-like rootstocks." The same mistake re-occurs under *Calypso* and *Hexalectris*, as possessing "coralloid roots." However, the *Juncaceæ* are no doubt the order that fares the very worst. The family description contains such peculiar statements as "pistil tricarpaceous," instead of tricarpellary, "anthers adnate," instead of basifixed, "2-celled" instead of four-celled; in the key to the species the leaves are described as "transversely flattened," or as "vertically flattened"! The descriptions of the species are also most remarkable with characters, as "rootstock proliferous" (*Juncus effusus*, etc.); "capsule cylindric-oblong, 3-sided" (*Juncus biglumis*); "basal leaves foliose" (*J. maritimus*), instead of foliar; "leaves filiform acuminate" (*J. repens*); "seed provided at the summit with a hooked caruncle" (*Luzula pilosa*); "capsule mucronate-aristate" (*J. trifidus*) etc. etc. Considering the fact that Professor Buchenau has several years ago published a most excellent monograph of the *Juncaceæ*, there seems no excuse for delivering so poor a treatment of this order.

King Valerius. *Melampodium* is explained in this way: "black foot, without significance"; it was named, however, for a Greek physician Melampus." *Obolaria* should be derived from "obolus, a coin, alluding to the round leaves," but the name *Obolaria* was not originally coined for this genus, but for *Linnæa*!, and the leaves of the former are not round either. *Lipocarpa* is said to be "Greek, alluding to the thick sepals in some species"; but there are no such species of the genus, and Robert Brown, who established *Lipocarpa* (Botany of Congo) says that it is from "lipo—fall off," the squamæ being deciduous. *Uniola* is not, as stated, "a diminutive of unus, of no obvious application," but referring to the uniform structure of the glumes. *Alyssum* should be Greek, "curing madness," but whether for dogs or gentlemen, our herb was not known to the old Greeks as "Alyssum." The interpretation of *Capnoides* and *Fumaria* as "smoke-like smell of some species" seems very risky, when we remember that neither *Fumaria*, *Dicentra* or *Corydalis* smell in the least of smoke. A still more fanciful derivation is obtained from names that have been incorrectly translated as, for instance, *Ajuga*, "without a yoke," but *a*—alpha privative is always Greek, while *jugum* is Latin; the name is a corruption of *Abiga*, from *abigere*. *Coeloglossum* is said to be Latin: "Heaven-tongue"! but it is Greek, and means "hollow tongue." *Phalaris* does not allude to the "shining grain," but to its likeness with a plume of helmet. *Hypochaeris* is explained: "for pigs, which are fond of its roots," but neither does Theophrastus intimate that the roots were particularly relished by pigs, nor do we know the plant so named by this author. *Epilobium* is said to be "a pod, flower and pod appearing together," but the most essential word has been forgotten, "ium," the latinized Greek name for a purple flower, hence, as told by Linnæus: *ion—epi—lobo*. *Viola* is thus a latinization of *ion*, the flower of Io, daughter of King Inachus. *Saxifraga*, curiously enough, is said to be "stone-breaking, from reputed medicinal qualities"; it is derived from *saxa* and *frangere*, from its growing in fissures of rocks.

The very unfortunate genus *Galeorchis* is explained: "referring to the hoodlike united sepals," but the name is half Latin

and half Greek, besides that the translation *galea*, a helmet and *orchis*, indicates a very strange combination. When names are made by latinization of French or German popular names, the derivation becomes, of course, very complicated. *Camelina* is said to be "Greek, low flax," but Fries informs us that it is of purely French origin, a modern latinization of *Cameline*. *Trollius* is said to be from "old German trol, something round," but trol is the German word for a gnome, and Læselius (*Flora Prussica*, 1703) calls the plant "Troll-Blum." *Aquilegia* should have been named so "from the fancied resemblance of the spurs to the eagle-claws," which sounds very nice, but the name, in accordance with Fries, seems to be a corruption of an old religious name, "Alleluja," later written *Aceluja*, and finally changed to *Aquilina* and *Aquilegia*, the Agley of the Germans and Akkeleje of the Scandinavians.

The Latin suffix : aster, astra, astrum is, as a rule, misunderstood; it is of classical origin and was used by Pliny to indicate escaped forms of cultivated plants, of which the fruits were of inferior quality, for instance, *Olea—Oleaster*. Such combinations as *Malvastrum*, *Urticastrum* and *Macounastrum* can, therefore, not be explained as "Star mallow," "Star nettle," or the like.

Erythraea is said to be "Greek, red, the color of the flowers in some species." However, Valentin Erythræus was a contemporary of Renealm, who established the genus, and it seems more than probable that this plant was dedicated to him. It is also very likely that Erythræus' original name was Roth, but that he, similar to Bock (*Tragus*), altered his name to Greek.

It would thus appear as if the etymology of plant-names is not entirely "in the dark," and that it can be worked out, when properly studied. But if the names are to be simply explained by means of translation, besides being entirely misunderstood it would be better to leave the derivations out altogether, especially in systematic works.

As an appendix to the derivations which have been discussed in the preceding, we might state that Linnæus did not dedicate his genera to persons without some certain reasons. There are several chapters in his books where he mentions these reasons,

and some of them are very amusing and characteristic of him. It was not by a mere chance that Linnæus named *Commelina* in honor of Commelinus; the flower has three petals, two of which are very showy while the third one is inconspicuous; of the three brothers Commelinus the two were excellent botanists, while the third one did not live to accomplish anything of importance. *Dorstenia*, with its small flowers, was named in commemoration of Dorsten's obsolete work. *Scheuchzeria*, a grasslike, alpine herb, was named for the two brothers Scheuchzer, of whom one became renowned by his treatment of the Gramineæ, and the other by his studies of the alpine plants. *Bauhinia*, with its two-lobed leaves, he named in honor of the two brothers Bauhin. The evergreen, ever-flowering and ever-fruited Rivina he dedicated to the immortal Rivinus. A Spanish botanist, Hernandez, had the good luck to receive a large stipendium in order to explore America, but he accomplished very little; and so bears the American tree, *Hernandia*, the most beautiful leaves of all trees, while the flowers are inconspicuous. *Magnolia*, with its gorgeous flowers and leaves, was named for the excellent botanist, Magnol. *Plukenetia* is a plant with flowers of a most peculiar structure, just as peculiar as Plukenet among the botanists. The famous Miller often sent seeds of his rich collections to Linnæus, but never more than two or five of each, hence the species *biflora* and *quinqueflora*. *Brovallia*, dedicated to a bishop, Brovallius, consists of three species: *demissa*, *elata* and *alienata*; because this gentleman was very humble and modest before he became a bishop (*demissa*), but very proud afterwards (*elata*), and later on he showed himself a rather unreliable politician, hence the species *alienata*! Very few botanists have adopted this method of Linnæus for naming genera, and, perhaps, fortunately so. Whether Cavanilles had any plausible reason for dedicating the ill-scented Creosote plant to DeLarrea we do not know; but, nevertheless, the genus has lately been transferred to some other person.

—BROOKLAND, D. C., February, 1906.

Notes on *Asarum canadense*.

— o —

E. THOMPSTONE, B. SC.

This plant is an inhabitant of rich, moist, shady places, and its stem creeps along the surface of the ground beneath the fallen leaves, which undoubtedly serve as a protection during severe weather.

From the under surface of the stem—except the young stem of the year—adventitious roots penetrate the soil.

Each year the stem creeps a little further along the ground, and, in addition to the large kidney-shaped foliage leaves, the young stem bears a few scale leaves, and near its apex a single flower—occasionally two.

The dark-green leaves, the flower, and the young stems are densely covered with soft hairs, and the young stem having no roots curves slightly upwards. The older stems have lost their hairs, and at a later stage the young stems are drawn down to the surface of the ground by the adventitious roots which they develop.

The handsome foliage leaves—generally two in number—are borne near the apex of the shoot, and the end of each year's growth is marked by the large leaf-scars.

The plant flowers early in May, and the flower, produced near the apex of the shoot of the year, on a short peduncle, hides on or near the ground. The ovary is inferior, and in the bud the tips of the sepals—usually three in number, though four not infrequently occur—are inflexed, and their edges united throughout the full length. The adnate stamens—twelve in number—are arranged in two whorls, and in the bud are bent gracefully, face downwards, away from the style.

As the bud opens, fissures appear between the lobes of the calyx, sufficiently large to admit of the entrance of small creeping insects, such as ants, leaf-hoppers, etc.

In pollination proterogyny is the rule, and about the time the fissures appear the stigmas are receptive and lie immediately beneath the openings, so that insects using these as entrance

gates must pass over the stigmatic surface, leaving upon it some pollen obtained from older flowers previously visited. After pollination has been effected the sepals separate at their tips and from being curved inwards begin to curve outwards, until they are reflexed or bent back, remaining attached, however, along the edges for about half their length, forming a bowl-shaped calyx. At the same time the pollen ripens and the stamens, by straightening out of the filaments, take up an erect position with their backs towards the stigma. The inner whorl—made up of the six stamens with longer filaments, alternating with the shorter ones of the outer whorl—rises first. A little later the remaining stamens take up a similar erect position, completing the cone-shaped covering to the stigma, the covering being formed by the anthers and the parts of the filaments projecting beyond them. The anthers then dehisce extrorsely, and, if an insect passes over them, with some force, scattering the pollen over the insect's body.

The inside of the calyx is dull olive to purplish brown in color, but has a broad white band with purple or brown stripes.

The corolla is reduced to small tooth-like projections or scales of a deep red color, alternating with the sepals.

The name Wild Ginger was given to this plant because of the pungent, aromatic taste of its rhizomes, and in a work on plants by Wm. Darlington, M.D., it is stated that "it is used as a substitute for ginger in some parts of the country." It was at one time held in medicinal repute by herbalists, being in England considered a remedy for headache and deafness, but it is now not much used.

It is also called Canada Snake-root, and has been used as a substitute for Serpentry root or Virginia Snake-root.

The name *Asarum* seems to be of ancient and obscure derivation. In Henderson's "Handbook of Plants," 1881, it is given as derived from the Greek "a" privative, and "saron," feminine—but the application of the term is unexplained.

—ONT. AGR. COLLEGE, Guelph, Ont.

The Flora of a Sandy Marsh.

—o—

A. B. KLUGH.

Near the village of Oliphant, Ont., on the Lake Huron shore, lies a sandy marsh, about three-quarters of a mile long and three hundred yards wide. It reaches from the low white sand hills to the sands of the lake shore. It is apparently an old lake basin, the various portions of which have reached different stages in their development, and, consequently, hydrophytic and mesophytic conditions prevail in different portions. In places the bottom is sandy but moist and firm, in others sandy and covered with moss, and in other places it is marly, the marl being soft. In August, 1905, when I explored this marsh, there was not more than five inches of water or soft mud in any part of it.

Throughout the marsh are slight elevations which appear to have been at no season immersed. On these elevations grew *Carex eburnea*, Boott, *Linum medium*, Britton, *Aster ptarmicoides*, T. & G., *Solidago canadensis*, L. and *Solidago nemoralis*, Ait.

The flora of this marsh is particularly interesting because of the occurrence of such south-western forms as *Solidago riddellii*, Frank, and *Cacalia tuberosa*, Nutt, together with such northern species as *Scirpus caespitosus*, L. and *Selaginella spinosa*, Beauv, and plants confined to the Great Lakes, as *Iris lucustris*, Nutt, and *Hypericum kalmianum*, L.

Below I give a list of the plants found in the marsh, with their abundance indicated by A, C, F, S, and R, which letters stand for abundant, common, frequent, scarce and rare respectively.

Botrychium virginianum, Swartz—F.

Equisetum palustre, L.—C.

Selaginella spinosa, Beauv—S

Juniperus sabina procumbens, Pursh—F.

Triglochin palustris, L.—C.

Triglochin maritima, L.—S.

Andropogon scoparius, Michx—F.

- Panicum pubescens*, Lam.—C.
Phalaris arundinacea, L.—C.
Muhlenbergia glomerata, Trin.—F.
Calamagrostis canadensis, Beauv.—C
Poa serotina, Ehrh.—C.
Glyceria nervata, Trin.—C.
Bromus ciliatus, L.—F.
Scirpus pauciflorus, Lightf.—C.
Scirpus caespitosus, L.—C.
Scirpus americanus, Pers.—A.
Scirpus lacustris, L.—C.
Eleocharis acuminata, Nees.—A.
Eleocharis rostellata, Torr.—C.
Cladium mariscoides, Torr.—A.
Rhynchospora capillacea laeviseta, Hill—A.
Rhynchospora alba, Vahl.—A.
Scleria verticillata, Muhl—C.
Carex hystericina, Muhl—S.
Carex aquatilis, Wahl—R.
Carex filiformis, L.—F.
Carex castanea, Wahl.—F.
Carex capillaris elongata, Olney—F.
Carex granularis, Muhl—C.
Carex flava, L.—S.
Carex flava oederi, Lilj.—C.
Carex eburnea, Boott.—S.
Carex aurea, Nutt.—F.
Carex leptalea, Wahl—C.
Carex vulpinoidea, Michx.—F.
Carex interior, Bailey—F.
Carex bebbii, Olney—C.
Juncus balticus, Willd—C.
Juncus bufonius, L.—C.
Juncus tenuis, Willd.—C.
Juncus richardsonianus, Schult—A.
Juncus canadensis, J. Gay—C.
Tofieldia glutinosa, Willd—C.
Zygadenus elegans, Pursh.—C.
Iris lacustris, Nutt.—C.
Cypripedium spectabile, Salisb.—S.
Habenaria hyperborea, R. Br.—F.
Spiranthes romanzoffiana, Cham.—C.
Sarracenia purpurea, L.—F.
Drosera rotundifolia, L.—C.
Drosera linearis, Goldie—C.

Ribes oxyacanthoides, L.—R.
Parnassia caroliniana, Michx.—C.
Rosa carolina, L.—C.
Potentilla fruticosa, L.—A.
Potentilla anserina, L.—A.
Linum medium, Britton—S.
Hypericum kalmianum, L.—A.
Proserpinaca palustris, L.—C.
Arctostaphylos uva-ursi, Spreng.—S.
Moneses grandiflora, Salisb.—S.
Gentiana serrata, Gunner—R.
Calamintha nuttallii, Gray—A.
Gerardia purpurea pauperula, Gray—A.
Castilleja coccinea, Spreng.—R.
Melampyrum americanum, Michx.—S.
Utricularia gibba, L.—S.
Utricularia cornuta, Michx.—F.
Lobelia kalmii, L.—C.
Solidago neglecta linoides, Gray—F.
Solidago canadensis, L.—F.
Solidago nemoralis, Ait.—C.
Solidago riddellii, Frank—A.
Aster laevis, L.—F.
Aster diffusus, Ait.—S.
Aster paniculatus, Lam.—C.
Aster umbellatus, Mill.—R.
Aster ptarmicoides, T. & G.—C.
Cacalia tuberosa, Nutt.—C.

—GUELPH, Ont.

The Cyperaceae of the Vicinity of Galt, Ont.

—O—
W. HERRIOT.

The following Sedges were collected by the writer within a radius of ten miles of Galt, Ont.

Several of these are found only in the southern portion of our area where the flora inclines markedly towards the Niagara Peninsular conditions. "C" marks them when common, "F" when frequent and "R" when rare.

Cyperus diandrus, Torr.—F.
C. esculentus, L.—F.
C. erythrorhizos, Muhl.—R.
Dulichium spathaceum, Pers.—C.

- E. ovata*, R. Br.—F.
E. palustris, R. Br.—C.
E. acicularis, R. Br.—C.
E. tenuis, Schultes,—C.
E. acuminata, Nees,—F.
E. intermedia, Schultes,—F.
E. rostellata, Torr.—F.
Fimbristylis autumnalis, R. & S.—F.
Scirpus pauciflorus, Lightf.—C.
S. debilis, Pursh,—F.
S. smithii, Gray,—F.
S. americanus, Pers.—C.
S. lacustris, L.—C.
S. fluviatilis, Gray,—R.
S. atrovirens, Muhl.—C.
S. microcarpus, Presl.—F.
S. lineatus, Michx.—R.
S. eriophorum cyperinus, Gray,—C.
Eriophorum vaginatum, L.—C.
E. polystachyon, L.—C.
E. gracile, Koch,—C.
E. virginicum, L.—C.
Rhynchospora alba, Vahl,—C.
R. capillacea, Torr.—C.
Cladium mariscoides, Torr.—C.
Scleria verticillata, Muhl.—F.
Carex pauciflora, Lightf.—F.
C. intumescens, Rudge,—C.
C. lupulina, Muhl.—C.
C. lupuliformis, Sartwell—R.
C. utriculata, Boott,—F.
C. tuckermani, Dewey—R.
C. retrorsa, Schwein—C.
C. schweinitzii, Dewey—F.
C. hystricina, Muhl—C.
C. pseudo-cyperus, L.—F.
C. comosa, Boott—C.
C. trichocarpa, Muhl—F.
C. aristata, R. Br.—R.
C. riparia, Curtis—C.
C. scabrata, Schwein—C.
C. lanuginosa, Michx—C.
C. filiformis, L.—R.
C. stricta, Lam—C.
C. limosa, L.—F.

- C. magellanica*, Lam.—R.
- C. crinita*, Lam.—R.
- C. gracillima*, Schwein—C.
- C. capillaris elongata*, Olney—F.
- C. arctata*, Boott—C.
- C. granularis*, Muhl—C.
- C. crawei*, Divy—R.
- C. flava*, L.—C.
- C. viridula*, Michx—F.
- C. hitchcockiana*, Dewey—F.
- C. vaginata*, Tausch—F.
- C. tetanica*, Schk—C.
- C. laxiflora*, Lam.—C.
- C. laxiflora varians*, Bailey—C.
- C. laxiflora patulifolia*, Carey—C.
- C. albursina*, Sheldon—C.
- C. plantaginea*, Lam.—F.
- C. laxiculmis*, Schw—R.
- C. aurea*, Nutt—C.
- C. eburnea*, Boott—F.
- C. pedunculata*, Muhl—C.
- C. communis*, Bailey—C.
- C. pennylvanica*, Lam.—C.
- C. albicans*, Willd—F.
- C. pubescens*, Muhl—F.
- C. jamesii*, Schwein—R.
- C. leptalea*, Wahl—C.
- C. chordorhiza*, L.—F.
- C. stipata*, Muhl—C.
- C. teretiuscula*, Gooden—C.
- C. teretiuscula ramosa*, Boott—C.
- C. vulpinoidea*, Michx—C.
- C. tenella*, Schk—C.
- C. rosea*, Schk—C.
- C. rosea radiata*, Dewey—F.
- C. sparganioides*, Muhl—R.
- C. cephaloidea*, Dewey—F.
- C. cephalophora*, Muhl—C.
- C. stellulata angustata*, Carey—F.
- C. stellulata excelsior*, Fernald—F.
- C. interior*, Bailey—C.
- C. canescens disjuncta*, Fernald—C.
- C. brunnescens*, Poir—C.
- C. arcta*, Boott—S.
- C. trisperma*, Dewey—F.

- C. deweyana*, Schw—C.
C. tribuloides, Wahl—C.
C. scoparia, Schk—F.
C. cristata, Schw—C.
C. bebbii, Olney—C.
C. foenea, Willd—F.
C. mirabilis, Dew—F.
C. sychnocephala, Carey—C.

—GALT, Ont.

The Cyperaceae of Wellington County, Ontario.

—O—
A. B. KLUGH.

The flora of Wellington County is Alleghanian. A slight Carolinian influence is evinced in the extreme South-west of the county and the flora of the extreme north shows a slight Canadian tendency. These differences are shown to a certain extent in the Cyperaceae, some species being found only near the southern border of the county and others only in the north of the county.

I wish here to acknowledge the kindness of Dr. M. L. Ferrald and Dr. Theo. Holm in examining specimens which I submitted to them for confirmation of identification.

Cyperus rivularis, Kunth. Scarce in a damp clearing near Puslinch Lake, (9 miles southwest of Guelph). Achenes mature Sept. 4, 1904.

Dulichium spathaceum, Pers. Abundant at Puslinch Lake. Achenes mature Sept. 27th, 1905.

Eleocharis ovata, R. Br. Scarce in a little marsh near Puslinch Lake. Achenes firm, July 19, 1905.

E. palustris, R. Br. Common throughout the county and varying greatly in size. The commonest form is from 3 to 5 dm. tall and very slender, but does not differ at all in achenal characters (aside from size) from the larger forms. Achenes firm July 23, 1905.

E. acicularis, R. Br. Scarce at Puslinch Lake.

E. tenuis, Schultes. Scarce at Puslinch Lake.

Scirpus lacustris, L. Common throughout the county.

S. atrovirens, Muhl. Abundant.

S. lineatus, Michx. Rare at Guelph. Achenes mature July 23, 1905.

S. eriophorum cyperinus, Gray. Common throughout the county.

Eriophorum callitrix, Chamisso. Abundant in a cleared portion of the

- Luther swamp in the north-east of the county. Achenes mature and commencing to fall June 25, 1905.
- E. viridi-carinatum*, Fernald. Common in bogs at Puslinch Lake. Achenes mature June 29, 1905.
- E. gracile*, Koch. Common in bogs at Puslinch Lake. Achenes flaccid June 3, 1905.
- E. virginicum*, L. Common in bogs at Puslinch Lake. Achenes mature August 11, 1904.
- Rhynchospora alba*, Vahl. Scarce at Puslinch Lake.
- Carex pauciflora*, Lightf. Scarce in a bog near Puslinch Lake.
- C. intumescens*, Rudge. Common in moist situations, particularly in damp woods. Achenes hard June 23, 1905.
- C. lupulina*, Muhl. Common in wet and damp situations. In anthesis June 28, 1905.
- C. rostrata*, Stokes. Only one plant found. This grew at the edge of the River Speed at Guelph. Achenes flaccid June 22, 1905.
- C. r. utriculata*, Bailey. Only one plant found. Near Ospringe, July 21, 1905.
- C. vesicaria monile*, Fernald. Scarce in the vicinity of Guelph, frequent at the borders of swamps near Ospringe (15 miles north-east of Guelph.) Achenes mature July 21, 1905.
- C. tuckermanni*, Dewey. Two patches in damp ground in the vicinity of Guelph. Achenes hard July 28, 1905.
- C. retrorsa*, Schw. Abundant in damp and wet situations throughout the county. Achenes flaccid June 28th, 1905.
- C. schweinitzii*, Dewey. Formerly abundant in a little marsh in Riverside Park, Guelph. Achenes flaccid June 26, 1905: achenes mature July 25. The marsh has now been drained and the *Carex* probably exterminated. Specimens from this station are in the Gray Herbarium, Mr. Herriot's herbarium and the writer's herbarium.
- C. hystricina*, Muhl. Abundant in wet situations throughout the county. Achenes mature July 21, 1905.
- C. pseudo-cyperus*, L. Frequent in marshes at Puslinch Lake.
- C. comosa*, Boott. Frequent in marshes at Puslinch Lake. Achenes mature Sept. 27, 1905.
- C. aristata*, R. Br. Frequent in a little pond near Pike Lake (near Mt. Forest). Common in a little pond near Puslinch Lake. Achenes firm June 24, 1905.
- C. riparia*, Curtis. Common in water throughout the county. Achenes firm June 3, 1905.
- C. scabrata*, Schw. A patch round a spring at the "Rocks" near Guelph. Achenes hard July 1, 1905.
- C. filiformis*, L. Common in bogs. Particularly abundant in ditches through the Luther Swamp. Achenes firm June 25th, 1905.
- C. stricta*, Lam. Common in bogs and damp situations throughout the county. Achenes flaccid June 3, 1905.

- C. s. angustata*, Bailey. Frequent in a damp field near Guelph. Achenes mature June 28, 1905.
- C. limosa*, L. Common in bogs at Puslinch Lake and Pike Lake. Achenes mature Aug. 28, 1904.
- C. paupercula pallens*, Fernald. Frequent in two bogs near Pike Lake. Achenes firm June 24, 1905.
- C. crinita*, Lam. Frequent in a small pond near Pike Lake and at the edge of a pond at Puslinch Lake. Two patches in damp ground near Guelph. Achenes firm June 24, 1905.
- C. gracillima*, Schw. Common in open woods. Achenes mature June 28, 1905.
- C. longirostris*, Torr. Scarce in woods in the vicinity of Guelph. Achenes flaccid June 9, 1905.
- C. arctata*, Boott. Scarce in woods at Puslinch Lake.
- C. granularis*, Muhl. Frequent in damp, open situations throughout the county. Achenes mature July 13, 1905.
- C. flava*, L. Rare in the southern portion of the county. Abundant in marshes at Pike Lake.
- C. f. oederi*, Lilj. Rare at the eastern margin of Pike Lake.
- C. hitchcockiana*, Dewey. Common in woods in the vicinity of Guelph. Achenes mature June 28, 1905.
- C. tetanica*, Schk. Frequent in woods in the vicinity of Guelph. Achenes mature June 28, 1905.
- C. laxiflora varians*, Bailey. Common in woods throughout the southern portion of the county. Achenes mature June 5, 1905.
- C. laxiflora patulifolia*, Carey. Common on banks in woods throughout the southern part of the county. Achenes mature June 28, 1905. The leaves of some of our specimens are 22 m.m. wide. In the field this sub-species is very distinct on account of its dense glaucousness.
- C. albursina*, Sheldon. Common in woods throughout the southern portion of the county. Achenes mature June 28, 1905.
- C. plantaginina*, Lam. Very rare in woods in the vicinity of Guelph. Achenes mature June 9, 1905.
- C. digitalis*, Willd. Scarce in woods in the vicinity of Puslinch Lake. Achenes mature June 29, 1905.
- C. careyana*, Torr. Common in two bushes in the vicinity of Guelph. In anthesis May 25, 1905; achenes firm June 8. This is the first time this species has been found in Canada, as specimens labelled *C. careyana* previously collected in Ontario, prove to be incorrectly named.
- C. laxiculmis*, Schw. Rare in woods in the vicinity of Puslinch Lake. Achenes mature June 29, 1905.
- C. aurea*, Nutt. Frequent in damp, open situations throughout the county. Achenes mature July 19, 1905.
- C. eburnea*, Boott. Frequent in dry situations throughout the county.

- C. pedunculata*, Muhl. Common in moist woods, especially under *Tsuga canadensis*, throughout the county. Achenes hard May 24, 1905; most of the perigynia fallen June 8.
- C. communis*, Bailey. Abundant in woods. Achenes hard June 5, 1905.
- C. pennsylvanica*, Lam. Abundant in woods. In anthesis April 19, 1902. Achenes mature June 28, 1905.
- C. albicans*, Willd. Scarce in woods. Achenes hard June 5, 1905.
- C. pubescens*, Muhl. Common in woods in the vicinity of Guelph. Achenes mature June 28, 1905.
- C. jamesii*, Schw. Common in two woods in the vicinity of Guelph. Achenes firm June 8, 1905.
- C. backii*, Boott. Scarce at the base of "The Rocks" near Guelph. Scarce in a bush at Puslinch Lake. Achenes mature July 1, 1905.
- C. leptalea*, Wahl. Frequent in swamps throughout the county. Achenes firm June 24, 1905.
- C. stipata*, Muhl. Common in ditches and wet situations throughout the county. Achenes mature July 13, 1905.
- C. teretiuscula ramosa*, Boott. Common in bogs at Puslinch Lake and Pike Lake and abundant in Luther Swamp. Achenes hard June 24, 1905.
- C. vulpinoidea*, Michx. Abundant in wet situations throughout the county. Achenes mature July 23, 1905.
- C. sartwellii*, Dewey. Rare in a little marsh at Pike Lake. Achenes firm June 24, 1905.
- C. tenella*, Schk. Common in swamps throughout the county. Achenes firm, June 2, 1905.
- C. rosea*, Schk. Rare in woods in the vicinity of Guelph. Achenes flaccid June 8, 1905.
- C. rosea radiata*, Dewey. Common in woods in the vicinity of Guelph. Achenes firm June 5, 1905.
- C. sparganioides*, Muhl. Frequent in woods in the vicinity of Guelph. Achenes mature June 28, 1905.
- C. cephaloidea*, Dewey. Common in woods in the vicinity of Guelph. In anthesis June 8, 1905. Achenes mature June 30. In damp, open situations in two localities near Guelph I have found a small, narrow-leaved form, which however does not differ in other respects from type and which thus appears to be merely an ecological form resulting from unfavorable conditions. This species has been previously recorded in Canada only from London, Ont. and Galt, Ont.
- C. interior*, Bailey. Common in damp situations throughout the county. Achenes mature June 27, 1905.
- C. stellulata excelsior*, Fernald. Common in a section of the Luther Swamp. Achenes flaccid June 25, 1905.
- C. canescens disjuncta*, Fernald. Scarce at Puslinch Lake and in the Luther Swamp. Achenes mature July 1, 1905.

- C. tenuiflora*, Wahl. Common in a section of the Luther Swamp. Achenes flaccid June 25, 1905.
- C. trisperma*, Dewey. Scarce along the margin of a ditch through the Luther Swamp. Achenes firm June 25, 1905.
- C. deweyana*, Schw. Abundant in woods throughout the county. Achenes mature June 28, 1905.
- C. bromoides*, Schk. Common in two wet woods in the vicinity of Guelph. Achenes firm June 5, 1905.
- C. tribuloides*, Wahl. Rare in a swale at Guelph. Achenes hard July 23, 1905.
- C. tribuloides reducta*, Bailey. Frequent in damp situations in the vicinity of Guelph. Achenes mature July 25, 1905.
- C. bebbii*, Olney. Abundant in damp situations throughout the county. Achenes firm July 23, 1905.
- C. cristata*, Schw. Abundant in damp situations in the vicinity of Guelph. Achenes hard July 23, 1905.
- C. sychnocephala*, Carey. Frequent in damp situations throughout the county. Achenes hard July 23, 1905.

—GUELPH, ONT.

NOTES.

A Knot on Lake Erie.

—O—

While collecting birds at Port Rowan on Sept. 19th, 1905, I flushed a flock of Red-backed Sandpipers. After they had flown, I noticed a bird remaining, which appeared larger than the Red-backs.

On collecting it I found it was a stranger to me, and not being positive in my identification, I had it verified by Mr. A. B. Klugh, of Guelph, as a Knot (*Tringa canutus*.) Although it was rare to me, it may not be so to other Ontario collectors.

W. D. HOBSON.

Woodstock, Ont.



A Nest of the Nashville Warbler.

—O—

On May 24, 1905, I found in a Blueberry marsh near Guelph, a nest of the Nashville Warbler, (*Helminthophila rubricapilla*). It was built on low ground amongst long grass and was composed mostly of moss and lined with dried grass and horse-hair. It contained five eggs.

J. L. BEATTIE.

Guelph, Ont.

The Carolina Wren.

The pair of Carolina Wrens which have inhabited a ravine in St. Thomas, Ont., since about October, 1904, are still here. This ravine is in the centre of St. Thomas, main thoroughfares run along both sides of it, and street cars pass along its edge. Passing along either street you can hear the male singing morning and evening.

C. J. STEVENSON.

St. Thomas, Ont.

The Northern Shrike Common at Alma, Ont.

This winter I noted the first Northern Shrike (*Lanius borealis*) here on November 14th, and from that date until now (Jan. 24th, '06) they have been unusually common.

JOHN ALLAN, JR.

Alma, Ont.

The Tagging of Birds.

In 1904 Mr. P. A. Taverner originated a practical method of tagging birds. The tags consist of little aluminum bands, bearing the inscription NOTIFY THEAUKNY and a number, which are closed round the legs of young birds. The inscription, when properly spaced, reads "NOTIFY THE AUK, N. Y." and if a letter is addressed thus it will reach Mr. P. A. Taverner, 165 Oakland Ave., Detroit, Mich. If any reader of this note should come across any of these tagged birds he should at once communicate with Mr. Taverner at the above address, sending the tag and the bird, if it has been preserved.

The immense value of this system is at once apparent, as it will give us data on the following subjects: How far a bird has migrated; if there is a migration movement east and west as well as north and south; if a bird returns in the spring to the vicinity of its birth-place; the age to which birds live, and the exact age of certain plumages.

Considering the short time during which this system has been in operation, it is encouraging to see that one tagged bird has already turned up. A young Flicker, which was tagged by Mr. Kirkpatrick, at Keota, Iowa, on May 29, 1905, was taken at Christmas time at Many, Louisiana, by Mr. V. E. Ross. Thus we have at least one case in which we know where a certain bird was reared and where it was wintering.

A. B. KLUGH.

Guelph, Ont.

The Bronzed Grackle at Toronto in Winter.

On January 14, 1906, I saw a Bronzed Grackle in the grounds of the University at Toronto, Ontario.

M. W. DOHERTY.

Guelph, Ont.

The Rough-legged Hawk in Ontario in Winter.

On Dec. 18th a Rough-legged Hawk, which had been killed on Dec. 16th at Oriel, Oxford Co., was brought to me. This is, I believe, the first time this species has been taken in Ontario in winter.

W. D. HOBSON.

Woodstock, Ont.

Nesting of the Canadian Warbler.

On June 15, 1905, I found a nest of the Canadian Warbler, (*Sylvania canadensis*) near Alma, Wellington Co., Ont. The nest consisted of dry leaves, bark, and grass, lined with horse-hair and placed in a little depression in the grass and moss under a little Balsam, 18 inches high.

It contained four eggs of the Warbler and three Cowbird's eggs.

JOHN ALLAN, JR.

Alma, Ont.

A Meadowlark at Guelph in Winter.

On Jan. 17, 1906, I saw a Meadowlark. (*Sturnella magna*) in a field east of Guelph, Ont. The only other winter record for Guelph is Feb. 3, 1900, when one was seen by Mr. F. Norman Beattie.

A. B. KLUGH.

Guelph, Ont.

A Flock of Cape May Warblers.

On May 6, 1905, near Guelph, Ont., I took a male Cape May Warbler, (*Dendroica tigrina*) from a flock of about twelve. This is the first time that more than two of these rather rare Warblers have been observed together in the county.

J. L. BEATTIE.

Guelph, Ont.

Biological Research in the Great Lake Region.

The Great Lakes Ornithological Club, which was organized in February, 1905, with the object of working out ornithological, ecological and distributional problems in the region of the Great Lakes, has already accomplished work of great value.

Point Pelee, Essex County, Ontario, was selected as a favorable locality for work. During the spring migration several members of the club spent a few days there, and in September some of the members camped for a fortnight on the Point, while another cruised about the chain of islands which runs from the Point to the Ohio shore. A full report of the work at Point Pelee will appear in the "Auk" in the near future.

In February, 1906, the Great Lakes Botanical Society was founded with the object of working out problems presented by the flora of the region, and co-operating with the Great Lakes Ornithological Club. It is hoped that in the future similar organizations may be formed to study the other biota of the region. Co-operative work of this kind should yield results of the very highest value to science.

A. B. KLUGH.

Guelph, Ont.

A New Station For a Northern Fern.

In August, 1905 I found *Woodsia hyperborea* growing on perpendicular cliffs of Huronian rock on Garden Island in Lake Tamagani, Ont.

WM. BRODIE.

Toronto, Ont.

An Introduced *Luzula*.

At Brock's Monument, Queenston Height's on June 12, 1905, I collected *Luzula nemorosa*, E. Meyer, a European species, which has not been previously found in Canada. There was only one rather small clump of the plant.

A. B. KLUGH.

Guelph, Ont.

Notes on the Flora of Northern Wellington County.

June 24 and 25, 1905, Mr. A. B. Klugh and the writer spent in a botanical investigation of the extreme north of Wellington County, Ontario.

In the vicinity of Mount Forest the flora was very similar to that of the Guelph district, the only plants found which are not recorded from the

south of the county being two *Carices*—*C. paupercula pallens* and *C. sartwellii*.

In the north-eastern corner of the county lies a vast swamp, known as Luther Swamp, and here we found the following plants new to the county:

Ranunculus purshii—A large patch in a ditch.

Valeriana sylvatica—Common in the swamp.

Myrica gale—Common.

Lonicera caerulea—One shrub.

Carex tenuiflora—Fairly common in a limited area.

Carex trisperma—Scarce.

Lilium philadelphicum—Two plants.

E. J. COLGATE.

Guelph, Ont.



A *Panicum* New to Canada.



While at Point Pelee, Essex Co., Ont., in Sept. 1905, I found *Panicum philadelphicum*, Bernh. to be common in the open, sandy woods near the west shore of the Point. This is the first record for the species in Canada.

A. B. KLUGH.

Guelph, Ont.



An Addition to the List of Wellington County Orchidaceae.



On June 4, 1905, I found near Guelph, Ont., a patch of *Corallorhiza striata*, Lindl. The plants were in full bloom.

H. ALICE CARTER.

Truro, N. S.



Eclipta alba in Canada.



On Sept. 5, 1905, I found a small patch of *Eclipta alba*, Hassk. in a damp situation about the middle of Point Pelee, Essex Co., Ont. It is probable that it was introduced in tobacco seed, as it was growing near a tobacco plantation. It has not been previously observed in Canada.

A. B. KLUGH.

Guelph, Ont.



Eragrostis purshii.



The diagnosis of *Eragrostis purshii* published in Reliquiae Schraderianae (Linnaea Vol. 12, p. 451) is very incomplete, and Schrader compares it with *E. elegans* var *minor*.

American authors have generally used the name *E. purshii* for a small,

annual, introduced species, but so far all the specimens identified as *C. purshii* have proved to be the old world *E. pilosa*, Beauv.

THEO. HOLM.

Brookland, D. C.

Another Station for *Artemisia caudata*.

In September, 1905, I found *Artemisia caudata*, Michx., to be common on the sand dune on the eastern shore of Point Pelee, Essex Co., Ont.

It has been previously recorded in Canada from Half Way Island in the Detroit River and from Sarnia.

A. B. KLUGH.

Guelph, Ont.

Notes on *Stachys germanica*.

As Guelph is, I believe, the only station known in America for *Stachys germanica*, L. (Mouse-ear) it appears to me that some notes on its distribution here might be of interest.

It was first observed near the stables at the O. A. C. in 1895 by Prof. M. W. Doherty, and was first recorded in the appendix to Vol. III of Britton and Brown's "Illustrated Flora," published in 1898.

It has now spread some three miles south-east, four miles south, and three miles west, and is a bad weed in pastures and along the roadside.

T. J. MOORE.

Guelph, Ont.

Helianthus strumosus mollis in Ontario.

In September, 1905, I found *Helianthus strumosus mollis* T. & G. to be common in thickets at Point Pelee, Essex Co., Ont. This sub-species has not been previously recorded from Canada, its range being given as Massachusetts to Pennsylvania and Iowa.

A. B. KLUGH.

Guelph, Ont.

Publications Received.

"How to Teach the Nature Study Course." By John Dearness, M.A., Vice-Principal London Normal School.

In this work Mr. Dearness has given us a fine exposition of the Nature Study idea and a guide to the proper teaching of this important subject, which should be in the hands of every teacher.

So much of the matter got out as Nature Study literature is either simple gush or inaccurate attempts at elementary science that we welcome such a book as "How to Teach the Nature Study Course," where the

educational value of things natural is pointed out in a clear, concise, and scrupulously accurate manner. The idea which is unfortunately held by some who are attempting the teaching of Nature Study that this subject is a hotch-potch of temperamental exstasies and elementary art studies and that names and exact data are of no importance, is clearly ruled out by Mr. Dearness when he says, "The teacher should have access to, and know how to use, such scientific manuals as Gray's 'Botany,' Jordan's 'Vertebrates,' Chapman's 'Birds,' Comstock's 'Insects,' and Crosley's 'Minerals.'"

A. B. K.

—o—
The Bob-white and other Quails of the United States, and their Economic Relations. By Sylvester D. Judd, Bull. No. 21, Bio. Survey, U. S. Dept. Agr.

The information relating to the Bob-white contained in this excellent bulletin emphasizes the great benefit which would be derived by the farmers of Ontario if this extremely valuable insect and weed destroyer was rigorously protected throughout its present range in the province, and introduced into such other parts of Ontario where, by the provision of a little food and shelter, it would be able to withstand the cold of our winters.

A. B. K.

—o—
The Horned Larks and Their Relation to Agriculture. By W. L. McAtee, Bull. No. 23. Bio. Survey, U. S. Dept. Agr.

In this bulletin it is shown that the Horned Larks are highly beneficial. They consume a small amount of grain, but this is nearly all waste grain left on the field after harvest. They eat practically no insects of value to man, but destroy great numbers of injurious insects and quantities of weed seed.

A. B. K.

—o—
The Grouse and Wild Turkeys of the United States and Their Economic Value. By Sylvester D. Judd. Bull. No. 24. Bio. Survey, U. S. Dept. Agr.

This is one of the most important economic papers ever published, as it shows emphatically that the Grouse and Turkeys should not be protected only because of their value as game, but on account of the great service they render to the farmer.

It is with the Ruffed Grouse that we in Ontario are chiefly concerned.

The food of this bird consists of 10.92 per cent. insects and 89.08 per cent. vegetable matter. Among the insects eaten are such injurious species as Grasshoppers, Cutworms, Chinch Bugs, Army-worms and Potato Beetles, and by scratching it unearths such pests as Wire-worms and the larvæ of May-beetles, which are not found by other birds.

The vegetable food consists mostly of buds, and it is shown that instead of injuring trees by feeding on the buds it really benefits them, as it acts as a most efficient "pruning knife" in clipping off the lateral buds, so that the terminal shoots develop more strongly and produce a better form of tree.

The high excellence of this paper makes our regret at the sad death of its author all the deeper.

A. B. K.

Rhodora: Journal of the New England Botanical Club. Vol. 7, Nos. 75-84, Vol. 8, Nos. 85 and 86.

Many articles of the greatest value to Ontario botanists have appeared in this journal during the past year. In No. 75 Mr. M. L. Fernald describes a new *Comandra*, (*C. richardiana*), and cites Belleville, Ont., as one of the stations from which he has seen it. In No. 77 the same writer revises the genus *Eriophorum* in North America in his characteristically careful and lucid manner, and in No. 79 gives notes on past treatments of the genus. In No. 78 Dr. B. L. Robinson shows that our common Hedge-mustard is *Sisymbrium officinale leiocarpum*, D. C., and not *S. officinale*. In No. 84 Pres. Ezra Brainerd revises the Eastern American white accaulescent species of *Viola*, and Mr. M. L. Fernald describes a new species of *Cynoglossum* (*C. boreale*) and cites an Ontario station. Mr. Oakes Ames, in No. 85, settles the identity of two species of *Habenaria* (*H. orbiculata* and *H. macrophylla*), which have been confused in past treatments of the genus. In No. 86 Mr. M. L. Fernald describes a new species of *Arenaria* (*A. litorea*) from Quebec and Ontario. A. B. K.

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The Plant World. Vol. VIII. Nos. 2-12. Vol. IX. No. 1.

These twelve numbers of the Plant World contain a large amount of valuable material upon all phases of botany. In No. 3 Prof. J. C. Arthur begins a lucid article on "The Nomenclature of Fungi Having Many Fruit-forms," which he concludes in No. 4. "A Glimpse at Early Botanical Literature," by Prof. L. M. Underwood, and "The Earliest Local Flora," by Prof. Edward L. Greene, in Nos. 2 and 5 respectively, are interesting sketches of botanical "ancient history." In No. 7 Prof. H. S. Reed commences an interesting article "A Brief History of Ecological Work in Botany," which he concludes in No. 8. "How Much Plant Pathology Ought a Teacher to Know," by Prof. Charles E. Bessey, in No. 8, and "Outlines for the Observation of Some of the More Common Fungi," by Prof. Geo. F. Atkinson, in Nos. 9 and 10, are most instructive articles to the uninitiated in these branches of botany. No. 12 contains an original observation upon the capsules of *Kneiffia*, by Roland M. Harper.

The Teachers and Review departments of this magazine are particularly strong. A. B. K.

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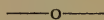
The Journal of the Maine Ornithological Society Vol. VII., Nos. 2-4; Vol. VIII. No. 1.

The Society is to be congratulated upon the greatly improved appearance of its journal. Many articles and notes of great interest are presented in these numbers, the most valuable of which are probably the excellent life histories of the Myrtle and Nashville Warblers, by Prof. Ora. W. Knight. In these two articles, in addition to much other interesting information, Prof. Knight says that the Myrtle Warbler takes about ten days in constructing the nest, the female doing most of the work, but the male occasionally assisting and often being present and singing. Incubation

usually begins upon deposition of the first egg, the female doing most of the incubating, though the male has on very rare occasions been seen on the nest and even singing while there. The period of incubation in one case was 295 hours, plus or minus an error of 1 hr. 40 mins. Six to seven days after hatching pin-feathers begin to appear and in 12 to 14 days the young are well advanced in the juvenal plumage and able to scramble out of the nest. In 2 or 3 days after leaving the nest they are able to take short flights.

The Nashville Warble takes 7 to 9 days to build the nest, and on its completion an egg is laid every day (usually between 6 and 10 a.m.) until the set is complete. The period of incubation is slightly over 11 days. Both male and female incubate, and when the eggs are very near the hatching point the male has been observed to bring food to the female on the nest. Both birds feed the young at first with soft grubs and caterpillars, and later with small beetles, flies and other insects. The young leave the nest about the 11th day after hatching.

A. B. K.



The Fern Bulletin. Vol. XIII; Nos. 1-4.

This excellent quarterly has during the past year published a great deal of valuable matter relating to *Pteridophyta*. The Fern Floras of the various States are continued, those of Georgia and Vermont being given in this volume. In No. 3 the editor, Mr. Clute, writes a good article on "Species and Varieties Among the Ferns," and in No. 4 begins a check-list of the North American Fern-worts, in which his treatment of species and sub-species is excellent.

A. B. K.



The Wilson Bulletin. Nos. 50-53.

This quarterly journal of Ornithology has, during the past year, put out much valuable material.

In Nos. 50 and 51 the editor, Prof. Lynds Jones, gives some excellent suggestions as to what phases of bird-life need particular attention in the field, and in No. 52 the same writer gives a good article on "The Drumming of the Ruffed Grouse." In No. 53 Mr. Bradshaw H. Swales gives additional data on the birds of south-eastern Michigan, and Mr. P. A. Taverner writes two articles entitled "Ornithology a Science" and "Priority." The latter is a comment upon the confusing frequency with which names are changed in ornithology. We certainly, with Mr. Taverner, regret this state of affairs, and while we recognize that the law of priority must be strictly applied in order that we may eventually have a stable nomenclature, we should prefer to see official changes made, only, say once every ten years.

A. B. K.

Bulletin of the Michigan Ornithological Club. Vol. VI. Nos. 1 and 2.

In these two numbers, which appear under one cover, Mr. P. A. Taverner writes a most important distributional article, "A Hyperlaken Migration Route," and Mr. N. A. Wood "Birds Noted en Route to Northern Michigan." Other articles and notes make up one of the best issues which have appeared.

A. B. K.

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Bird-Lore. Vol. VII, Nos. 2-6; Vol. VIII, No. 1.

The Ohio Naturalist. Vol. V, Nos. 5-8; Vol. VI, Nos. 2 and 4.

The Condor. Vol. VII, No. 4-6; Vol. VIII, No. 1.

Cassinia. A Bird Annual. 1905.

The Iowa Naturalist. Vol. I, Nos. 1-4.

The Ottawa Naturalist. Vol. XIX, Nos. 1-12.

The American Botanist. Vol. 8, Nos. 2-6; Vol. 9, Nos. 1-4; Vol. 10, Nos. 1 and 2.

Le Naturaliste Canadien. Vol. XXXXII, Nos. 5 and 7; Vol. XXXIII, Nos. 1 and 2.

The Apteryx. Vol. I., Nos. 2 and 3.

Bulletin of the Lloyd Library No. 8. Mycological Series, No. 3.

Mycological Notes. By C. G. Lloyd. Nos. 19 and 20.

Index of the Mycological Writings of C. G. Lloyd.

The Genera *Balansia* and *Dothichloe* in the United States, with a consideration of their Economic Importance. By Geo. F. Atkinson. (Reprint from Jour. Myc. 11 : 248-268.)

Life History of *Hypocrea alutacea*. By Geo. F. Atkinson. (Reprint from Bot. Gaz. 40 : 401-417.

Bibliography of Canadian Zoology for 1904, By J. F. Whiteaves. (Reprint from Trans. Royal Soc. Can., 2nd Series, 1905-1909.)

National Academy of Sciences. Vol. X., Second Memoir. *Claytonia*. A Morphological and Anatomical Study. By Theodore Holm.

Missouri Botanical Garden. 16th Annual Report.

The Historical and Scientific Society of Manitoba. Transaction No. 68. A Review-History of the Passenger in Manitoba. By G. E. Atkinson.

The Postglacial Dispersal of the North American Biota. By Chas. C. Adams. (Reprint from Bio. Bul., Vol. IX, No. 1.)

Montana Agricultural College Science Studies. Botany, Vol. I, Nos. 1 and 2 by J. W. Blankinship. No. 3 by J. W. Blankinship and Hester F. Henshall.

- Bibliography of Canadian Botany for 1904. By A. H. MacKay, LL.D.
(Reprint from Trans. Royal Soc. Can. Second Series, 1905-1906.)
- Report of the Botanical Club of Canada for 1904-1905. By A. H. MacKay, LL.D. (Reprint from Trans. Royal Soc. Can. Second Series, 1905-1906.)
- The Relation of Birds to Fruit Growing in California. By F. E. L. Beal.
(Reprint from Yearbook Dept. Agr., 1904.)
- Transactions of the Wisconsin Academy of Sciences, Arts and Letters.
Vol. XIV, part II.
- The Generic Concept in the Classification of the Flowering Plants. By B. L. Robinson. (Reprint from Science, N. S. Vol. XXIII, No. 577, pp 31-92.)
- Some Benefits the Farmer May Derive from Game Protection. By T. S. Palmer. (Reprint from Yearbook, Dept. Agr., 1904.)

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